

## Remarks

This is an amendment filed following the final rejection dated 10/29/2007. Entry of this amendment is requested as it places the application in better condition for appeal in that it eliminates the objection of claim 44 and the rejection of claims 37-44 under 35 USC 101 and was not earlier presented as it responds to objections and rejections which were raised for the first time in the final rejection. This amendment also responds to requirements made by the examiner in the final rejection regarding claim 44. See M.P.E.P. 714.12 in this regard.

The claims now in the case are claims 37-44.

Applicants wish to express their gratitude to the examiner for the courtesies shown to one of the applicants and their undersigned representative during the interview held on 10/15/2007. The examiner's summary of the interview is correct.

Claim 44 was objected to in that the preamble of the claim called for a table whereas the claim from which claim 44 depended called for a spelling. The examiner's attention to detail is appreciated. Reconsideration of this objection is requested. Claim 44 has been rewritten so as to no longer depend on claim 37. It is considered that the objection has been overcome and may be withdrawn.

Claims 37-44 were rejected under 35 USC 101 because the claimed invention was considered to be directed to non-statutory subject matter. Reconsideration of this rejection is requested. As amended, the claims call for a spelling on a medium and a table on a medium. Thus the claimed subject matter falls within a statutory class. It is requested that this rejection be withdrawn.

Claims 37-43 were rejected under 35 USC 102(b) as being anticipated by King et al. (King). This rejection is traversed.

The decision of *Ex parte Levy*, 17 USPQ2d 1462 (BPAI 1990) held that the factual determination of anticipation requires the disclosure in a single reference of every element of the claimed invention and that it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference. The decision of *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990) requires that the elements of the prior art must be arranged as required by the claims. It is applicants' position that the cited reference fails to disclose the subject matter of the claims as amended. The following discussion will make the reasons for this position clear.

King takes into consideration either pinyin or four corners to recognize a single character but King does not use both pinyin and 4-corner together to recognize the same single Chinese character. This is clearly stated by King in the following. Column 8, lines 44-49 of King clearly states: "However, of the two, the shape recognition mode represents the preferred embodiment of the invention, with the phonetic mode representing an alternative method of providing coded data representative of a character to be produced."

For recognizing a two-character word, King's method recognizes each character individually using either pinyin or four corners, then examines the two-character combination as a pair using a special pre-stored database for possible recognition. Column 18, lines 19-22, states: "If a second identifier code is entered, the system first registers that fact and then calls up the index codes for the second identifier, as indicated in block 166, before proceeding."

This shows that King's method does not use both pinyin and four corners to recognize a single character. Applicants' invention claims the use of both pinyin and four corners with a differentiator to recognize a single character.

The four cases in column 22, lines 38-41 of King refer to two-character recognition cases for di fang, as stated in column 22, line 36. King's method uses either pinyin or four corners to recognize a single character separately. King's method does not combine both pinyin and four corners to recognize a single character.

There is imprecise wording in column 22, lines 38 and 39. In order to remove any ambiguity or misunderstanding, applicants believe that column 22, lines 38 and 39 should be written as:

Shape recognition + Shape recognition: 4411, 955 and  
pinyin + pinyin: di, fang.

These are consistent with King's further illustrations on lines 40 and 41 as:

Shape + pinyin: 4411, fang and  
pinyin + shape: di, 955.

With these changes in column 22, lines 38 and 39, it is clear that King's method uses either pinyin or four corners to recognize individual characters. After each of the two characters is recognized by either pinyin or four corners, King's method goes to the second stage of recognizing the two-character pair, using their pre-stored two-character database. All these four examples illustrate how King spells a two-Chinese-character-pair. These two Chinese characters in the pair are shown very clearly in Figure 2 and Figure 3 in King's patent. Each of the four examples has two Chinese characters in a pair in King's two-character-pair method. In each of these four examples, there are two

spelling components where each spelling component is spelling one of the two Chinese characters in the pair. In these four illustrative examples, King never uses two spelling components together simultaneously to identify a single Chinese character. These four examples provided by King show clearly that King's invention is very different from the invention of applicants which concatenates three spelling components together simultaneously on a single Chinese character in order to eliminate the recognition ambiguity.

In view of the amendment to claim 37 and the above discussion, it is urged that the rejection may be withdrawn.

Regarding claims 38-41 and 43, the above discussion should suffice to make these claims patentable. The decision of *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988) holds that the allowability of a generic independent claim over prior art will carry with it the allowability of the narrower dependent claims.

Regarding claim 42, kindly note that the third component comprising a differentiator provides a unique identification of the ideographic symbol. This is a completely different identifier from the identifiers representing the sound and the shape of the character. If the combination of the identifiers identifying the sound and the shape completely identifies the character and distinguishes it from all other characters, no further identification is needed, and the third component may be null. If there are two or more characters having the same sound and shape identifiers, an additional identifier is needed to signify a particular character. This additional identifier will be an alphanumerical as the third component.

This situation is completely different than the portion of the King reference discussed by the examiner. The King four-corner system is explained as eliminating the null symbol. Thus, where the prior system would identify “/” as 1000, the King system would identify it as 1. This change to the old four corner system has nothing to do with having a third identifier for a given character. It is believed that the rejection of claim 42 may be properly withdrawn.

Claim 44 was rejected under 35 USC 103(a) as being obvious over King. The teachings of the reference and the application of these teachings to the claim are found on pages 6 and 7 of the Office action. This rejection is traversed.

The propriety of a rejection based on 35 USC 103 is determined by whether the examiner has correctly resolved the four Graham factual inquiries found in section 2141 of the M.P.E.P. to establish a factual background against which the obviousness of the claimed invention may be determined and has correctly complied with the three requirements found in Section 706.02(j) of the M.P.E.P.

The first Graham factual inquiry is determining the scope and contents of the prior art. The examiner states that King teaches a spelling comprising a plurality of phonetic spellings and ideographic symbols. It must be understood that for any single ideographic symbol, King uses either the phonetic spelling which indicates the sound and tone of the symbol or the shape spelling which indicates the four-corner information of the symbol. For a pair of ideographic symbols, King may use either the phonetic or shape spelling for one symbol and either the phonetic or shape spelling for the other symbol. King never uses a combination of both phonetic spelling and shape spelling for a single symbol. To the extent that the combination of both a phonetic spelling and a

shape spelling is used to describe a single symbol is implied by the examiner's statement, it is in error.

More specifically, the examiner relies on the abstract to make this teaching. The abstract states: A twelve-key keyboard utilizing a modified four-corner identifier system permits construction of a first shape identifier code utilizing indicia which represent the shape of a character to be reproduced. Alternatively, a phonetic identifier code utilizing a phonetic alphabet can be constructed to represent the character.

Figure 2 merely shows two Chinese characters and their respective sounds and tones.

Column 17, line 62 to column 18, line 22 states in part: "As indicated in block 150, the first step in the process is for the typist to enter into the system by means of either the keyboard 10 or the keyboard 11 one or two coded identifiers selected in accordance with the four-corner stroke configuration of the character or characters to be typed, or selected in accordance with the phonetic spelling of such character or characters, or selected in accordance with a combination of these, i.e., with some characters being selected phonetically and others by their shape. The two modes are interchangeable, not exclusive, so that if desired each character of a two-syllable word can be selected differently." This teaching makes it clear that the phonetic and shape identifiers are used alternatively, not in combination for any single symbol.

Column 20, lines 7-17 uses the expression "and/or". It must be remembered that King is discussing symbol pairs. As such, both symbols can be described using phonetic identifiers, both symbols can be described using shape identifiers, or one symbol can be described using a phonetic identifier while the other is described using the shape

identifier. King never positively states that any single symbol is described using both a phonetic identifier and a shape identifier simultaneously.

In column 22, lines 13-42 King states: Although keyboards 10 and 11 can be used separately and a system can be produced in accordance with the invention having only one keyboard, numerous advantages may be derived from providing the two in parallel. With such an arrangement, the two keyboards can be interchangeably used without resorting to any sort of shift mechanism, and the system will operate as described above. Thus, for example, the word "di fang" can be identified in any of the following ways:

Shape recognition: 4411, 955

Pinyin: di, fang

Shape+pinyin: 4411, fang

Pinyin+shape: di, 955.

Here, it is quite clear that King is using the two-character word, "di fang" shown in Figure 2. King describes all four ways of describing this word, each method having only a phonetic or shape identifier for any one character. There is never any use of a combination of a sound identifier and a shape identifier for either of the characters.

It is clear from the above discussion that King never teaches the use of a combination of a phonetic identifier and a shape identifier for a single character. Accordingly, it is considered that the first Graham inquiry has not been resolved.

As to the second Graham factual inquiry, the examiner stated that King does not specifically teach that the information is formulated on a table. This statement implies

that all other features of the claims are shown by King. As shown above, this implication is not correct and the second Graham factual inquiry has not been resolved.

The third Graham factual inquiry is the determination of the level of skill possessed by one of ordinary skill in the art. The examiner has failed to address this issue. In order to complete the record applicants suggest that one of ordinary skill in the art is a translator from Chinese into English. The skill possessed by such a person is a college education with a B.A. degree, a major in foreign languages, and three years of experience as a translator.

The fourth Graham inquiry is the evaluation of evidence of secondary considerations. It is applicants' position that the claimed subject matter differs from the subject matter taught by King and that this difference leads to results which would not be expected by those skilled in the art, thus leading to patentability of the invention as a whole.

King's patent relates to Chinese character input system (character recognition.) King does not claim unique table of Chinese characters. In King's example, King was trying to recognize the desired character by using an indirect input method.

The following Table 1) shows three internal Codes: Telegraph, GB, and Big-5. The Telegraph Code table is not commonly used.



	Telegraph Code		GB Code		Big-5 Code	
1	一	0001	啊	<u>b0a1</u>	一	<u>a440</u>
2	丁	0002	阿	<u>b0a2</u>	乙	<u>a441</u>
3	七	0003	埃	<u>b0a3</u>	丁	<u>a442</u>
4	丈	0004	挨	<u>b0a4</u>	七	<u>a443</u>
5	三	0005	哎	<u>b0a5</u>	乃	<u>a444</u>
6	上	0006	唉	<u>b0a6</u>	九	<u>a445</u>
7	下	0007	哀	<u>b0a7</u>	了	<u>a446</u>
8	不	0008	皑	<u>b0a8</u>	二	<u>a447</u>
9	丐	0009	癌	<u>b0a9</u>	人	<u>a448</u>
10	丑	0010	藕	<u>b0aa</u>	儿	<u>a449</u>
11	且	0011	矮	<u>b0ab</u>	入	<u>a44a</u>
12	丕	0012	艾	<u>b0ac</u>	八	<u>a44b</u>
13	世	0013	碍	<u>b0ad</u>	几	<u>a44c</u>
14	丙	0014	爱	<u>b0ae</u>	刀	<u>a44d</u>
15	丞	0015	隘	<u>b0af</u>	刁	<u>a44e</u>

Table 1: Sample of three Internal Codes

The characteristics of a code table are its uniqueness of one-to-one matching of a character and its related code.

King's invention is only an input method that is trying to pick the desired character using an indirect method. In King's invention, there is huge number of three types of input ambiguity tables:

1. Many thousands of sound tables corresponding to thousands of different sounds in the Chinese language. Each of such sound tables selects all the characters having the same sound when the "sound code" is given.
2. Many thousands of shape tables corresponding to thousands of four-corner codes for different shapes of Chinese characters. Each of such

shape table selects all the characters having the same shape when the “shape code” is given.

3. Millions of two-character tables for millions of possible combinations and permutation of two-character pairs in Chinese language. Each of such two-character tables contains many two-character pairs and is pre-stored in King’s database.

All these three types of ambiguity tables are part of the recognition process. None of them has the one-to-one characteristics of an internal code (e.g. GB or Big-5.) This means that for each spelling (either Pinyin or four-corner) in King’s invention, there is an abundance of ambiguity with many corresponding Chinese characters (homotones) with different meaning. In the worst case, there are 124 different Chinese characters corresponding to a Pinyin spelling of “yi4” [yi 4<sup>th</sup> tone]. Without a unique correspondence between a spelling and its unique Chinese character, then one cannot construct a simple table to show the unique relation between the spelling and the corresponding single Chinese character.

For the “Table” in applicants’ invention of the Chinese Spelling Code (CSC), applicants mean a simple two column table that list all Chinese characters in the left-hand column and their corresponding CSC code on the right-hand column. An example is given in Table 2.

<p style="text-align: center;"><b>CSC Code Table – Sample List from King's Examples</b></p>
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Chinese	CSC Code
埕	DI44411
育	YU40022
方	FANG10022
帝	DI40022
高	GAO10022
商	SHANG10022
市	SHI40022

Table 2 Sample CSC Table

This CSC table is simple because CSC provides a unique spelling code for each Chinese character. Therefore, each Chinese character in the left column has a unique corresponding CSC spelling code on the second column. When a user types in a CSC spelling code, the computer knows exactly the single Chinese character on such table that corresponds to the typed CSC spelling code. Therefore, this simple CSC Table enables fully automated computer processing for efficient management of Chinese information without the need for the user to stare at multiple possible characters to select the desired character as in the King reference. This simple table can be stored in the computer for both data entry application and for efficient management of Chinese information, fully automated.

On the other hand, in King's invention, it is not a simple two-column table, but is millions of ambiguity tables as explained in the following.

King's invention is an indirect input method that is trying to reduce the large amount of ambiguity in the single character input method. King's invention uses either the Pinyin or the four-corners method to enter the two-character pair one character at a time.

Because of the non-uniqueness problem, multiple characters will show up due to the fact that they share the same code. The first entered code for the first character in the pair might have M characters sharing the code and the second entered code for the second character in the pair might have N characters sharing the second code. King's invention will then form an MxN table and in each cell of the table is a two-character pair. King's method will determine the "meaningful" combinations of these pairs since not all combinations make sense in Chinese language and present them to the user for final selection.

In the example cited in King's application, the first character code, 4411, has 24 characters having the same four-corners code and the second code, 0022, has 36 characters having the same code as shown in the following Table 3. Note that the standard four-corners code for the second character in this example is 0022, while King's modified four-corners code is 955.

As an illustration, Table 3 tabulates two four-corners codes, 4411 and 0022 and their associated groups of Chinese characters having similar shape and therefore sharing the same four-corner code. Table 3 shows that for each four-corners code there are many

characters having the same code, illustrating the non-uniqueness of the four-corners code input method. It is seen that 24 different Chinese characters share the same code 4411 and 36 different Chinese characters share the same code 0022. The four-corners code of 0022 is selected because it is the original four-corners before King modified it to 955 for the Chinese character 'fang1' [fang 1<sup>st</sup> tone].

24 Characters Sharing the Same Four Corners Code '4411'										
	1	2	3	4	5	6	7	8	9	10
1	地	茫	堪	菲	蔬	范	茫	莠	流	莠
2	埴	塏	塏	菹	蘊	堙	疋	茺	蕪	茺
3	埶	芻	蒞	蕪						
36 Characters Sharing the Same Four Corners Code '0022'										
1	方	席	高	市	廖	育	商	帝	序	膺
2	庠	庠	廌	廟	育	裔	齋	廊	廌	齊
3	廌	廌	廌	彥	譽	齋	齋	齋	廌	齋
4	帑	庸	旁	膏	腐	离				

Table 3 – Multiples of characters having the same Shape-based Four-Corners Code

For this two-character pair of codes, King's method will generate  $24 \times 36 = 864$  pairs.

In Table 4, the Table is limited to show only  $8 \times 9 = 72$  pairs of Chinese characters for illustrative purpose and the remaining portion ( $864 - 72 = 792$ ) are shown as dot dot dot.

Partial Tabulation of Two-Character Pairs Formed by 4411 & 0022									
4411+0022	地+方	茫+方	堪+方	菲+方	蕪+方	范+方	苙+方	珏+方	.....
	地+席	茫+席	堪+席	菲+席	蕪+席	范+席	苙+席	珏+席	.....
	地+高	茫+高	堪+高	菲+高	蕪+高	范+高	苙+高	珏+高	.....
	地+市	茫+市	堪+市	菲+市	蕪+市	范+市	苙+市	珏+市	.....
	地+廖	茫+廖	堪+廖	菲+廖	蕪+廖	范+廖	苙+廖	珏+廖	.....
	地+育	茫+育	堪+育	菲+育	蕪+育	范+育	苙+育	珏+育	.....
	地+商	茫+商	堪+商	菲+商	蕪+商	范+商	苙+商	珏+商	.....
	地+帝	茫+帝	堪+帝	菲+帝	蕪+帝	范+帝	苙+帝	珏+帝	.....
	地+序	茫+序	堪+序	菲+序	蕪+序	范+序	苙+序	珏+序	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table 4 – Two-character combination Table formed by 4411+0022  
 Using King's modified four-corners  
 (0022 is the standard four-corners code corresponding to King's 955)

Out of the 72 combinations more than 25 pairs can be considered meaningful combinations in the Chinese language. If all 864 pairs are examined, the meaningful pairs will surely exceed 25 pairs. King's method must store these meaningful pairs in the database and present these pairs to the user for final selection. Such an ambiguity table would be shown in Table 5 below:

Meaningful Pairs in Two-Character Pairs Formed by 4411 & 0022									
4411+0022	地+方	茫+方	堪+方	菲+方		范+方	汙+方	莚+方	.....
			堪+席	菲+席	藎+席				.....
	地+高								.....
	地+市		堪+市	菲+市	藎+市	范+市	汙+市	莚+市	.....
									.....
						范+宜			.....
	地+商		堪+商	菲+商	藎+商			莚+商	.....
	地+帝			菲+帝					.....
				菲+序		范+序		莚+序	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table 5: Ambiguity Table

Notice that Table 5 is an “ambiguity” table for inputting two particular sample codes 4411 and 0022 because of the non-uniqueness problem. The output from King’s invention is not a single unique pair of Chinese characters but has a substantial ambiguity of more than 25 possible and meaningful pairs as shown in Table 5 and described in the paragraph below.

Since there are many thousands four-corner codes for 50,000 Chinese characters, the possible combinations and permutations of two-code pairs in the two-character pair input method in King’s invention is (many thousands) x (many thousands), resulting in millions of such ambiguity tables that must be stored in the computer. Each time a user types in two codes for the intended two-character pair, the computer presents the

corresponding ambiguity table with many possible two-character pairs, similar to those shown in Table 5, for the user to stare at and to select the intended pair.

In summary, applicants' CSC provides a simple two-column table for fully automated and efficient management of Chinese information without the need for a human being to stare at any ambiguity table to select the desired character. On the other hand, King's invention require (A) storing millions of ambiguity tables, and (B) a human being to stare at such ambiguity tables with many possible combinations to select the desired two-character pair such that it cannot be fully automated in the computer for efficient management of Chinese information.

It is clear the simple CSC Table and its capability in claim 44 cannot be achieved in King's invention. Thus, the results achieved by applicants' invention are unexpected and claim 44 should be patentable.

The first basic criterion set forth in the M.P.E.P. is the articulation of some suggestion to modify the reference. The examiner relies upon what is well known in the art to provide this suggestion. The examiner is called upon to supply applicants with an affidavit as called for by 37 CFR 1.104(c)(3) setting forth clearly and precisely the facts which are available to those skilled in the art and which are relied upon by the examiner. In the absence of such an affidavit the rejection cannot be maintained.

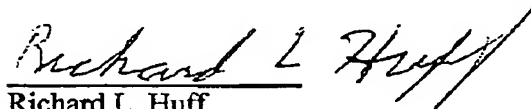
The second basic criterion set forth in the M.P.E.P. is a reasonable expectation of success. It is presumed that those skilled in the art would expect a degree of success from making tables from the input obtained from the King method. Of course, the tables would be multiple ambiguity tables from which the user would have to select the desired character.



The third basic criterion set forth in the M.P.E.P. is that the prior art, as modified as suggested by the examiner must teach or suggest all the claim limitations. The examiner has suggested that the King reference be modified by arranging the information created by King's method into tables. Clearly, this would not result in tables identical to those of the claim. In the table of the claim there is a first column containing ideographic symbols and a second column containing spelling corresponding to the symbols wherein each spelling contains an alphanumeric identifier for the sound and tone, an alphanumeric identifier for the shape, and an alphanumeric identifier used as a differentiator to avoid any possible ambiguity remaining once the first two identifiers are considered. In any table resulting from King's disclosure there would be a first column for the ideographic symbols and a second column for containing all possible phonetic identifiers representing those symbols (each ideographic symbol would have more than a single phonetic identifier) or a second column containing all possible modified four-corner identifiers representing the shape of those symbols (each symbol would have more than a single identifier). Thus the third basic criterion called for by the M.P.E.P. has not been met.

In light of the above it is considered that the amendment should be entered and the application should be indicated as allowable.

Respectfully submitted,



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